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TRANSACTIONS OF THE SOCIETY FOR BRITISH ENTOMOLOGY

VOL. 11 24TH MARCH, 1953 PART 9

A REVISION OF THE BRITISH (AND NOTES ON OTHER) SPECIES OF LONCHAEIDAE (DIPTERA)

By J. E. COLLIN, F.R.E.S.

The Lonchaeidae (or genus *Lonchaea* sens. lat.) constitute a remarkably compact group. They are easily recognized by their shining black, or blue-black, colour, shape of head, and Trypetid-like female ovipositor; frons in male always somewhat narrower than in female, always hairy, and with only one pair of orbital bristles placed high up towards vertex; strong bristles on disc of thorax usually confined to prescutellar area, and mesopleurae always extensively hairy and bristly. At one time the species of *Palloptera* and *Eurygnathomyia* were included in this family, but recent research has proved that while species of *Palloptera* do show relationship to the Trypetidae, not only in their female genitalia but also in the male genital organs as well as in larval habits, species of *Lonchaea* have entirely different male genitalia as well as larval habits, indicating their more correct position in a different stem of the Acalypterate Muscids. Hennig (1948) considered that they are more related to the Chamaemyidae (Ochthiphilidae), and there is possible support for this conclusion in evidence of similar predacious larval habits in both families.

Czerny in 1934 (Lindner's "Die Fliegen") divided the European species of *Lonchaea* into nine subgenera, three of which were new. Several of the characters used by him for distinguishing these subgenera will not stand the test of a critical study of the species, some prove to be variable, and others of only specific value. The question whether a character is a true group character or not, can often be settled only by a critical examination of the male genitalia of all the species. When this test is applied to the British species of *Lonchaea* it becomes obvious that they can be divided into three main groups, or genera.

1. *Dasyops* Rdi. (1856 as *Dasiops*). Type *Lonchaea latifrons* Mg., as *loncheus* n.n. (*D. loncheus* Rdi. 1856=*Chortophila lasiophthalma* Mcq. 1835, t. Rdi. 1874=*Lonchaea latifrons* Mg. 1826, t. Beck. 1902).

Syn. *Psilolonchaea* Czerny (1934). Type *Lonchaea spatiosa* Beck.

The males of this genus possess a genital character—the presence of lamellae (or forceps) articulated to the edge of ninth tergite (fig. 1) which distinguishes them at once from all other British males, and establishes, without question, their right to inclusion in a separate genus. In the males of other British genera these lamellae are represented by an *internal* lamina lying beneath the ninth tergite, sometimes projecting beyond the edge of

that tergite. Moreover the penis of *Dasyops* is of completely different structure with a co-axial apodeme absent in other genera. A chaetotactic character correlated with the genital one in *Dasyops* is the presence of a poststigmatical bristle or bristles, situated behind the prothoracic stigma and below the posterior margin of humerus; these bristles are usually isolated, a short distance in front of the foremost upper mesopleural bristles, which are often similar in size and curvature, therefore care is needed in identifying the poststigmaticals. An additional character, in at least all British species, is the presence of one or more strong bristles on front part of jowls, near, but not quite in the position usually occupied by "vibrissae." Both sexes have frontal lunule with small bristles at least on upper margin, and some females possess an exceptionally wide ovipositor.

Czerny distinguished his new subgenus *Psilolonchaea* from *Dasyops* by its bare frontal lunule, and absence of small bristles between the stronger bristles round margin of scutellum. We have three British species agreeing very well in comparative distinctions with Czerny's three European species of *Psilolonchaea, but the lunule is not bare in any of them*, there are small bristles at least on its upper margin. Czerny certainly described the lunule of *latiterebra* as "klein," and that of *spatiosa* as "ziemlich gross," while in the British species I associate with these names this should be reversed, but in other respects the descriptions (including absence of small bristles round margin of scutellum) apply to our species. I can only conclude that Czerny overlooked the small bristles on upper margin of lunule. The male genitalia of these three species prove that they are congeneric with *Dasyops latifrons*.

2. *Lonchaea* Fln. sens. str. (1820). Type *L. vaginalis* Fln. (1820).
Syn. *Tricholonchaea* Czerny (1934). Type *Lonchaea albitarsis* Ztt.
Syn. *Lasiolonchaea* Enderlein (1936). Type *Lonchaea hirticeps* Ztt.

This is the dominant group containing by far the largest number of species. There is no poststigmatical bristle, the frontal lunule is bristly, cheeks and jowls never very wide, and sternopleural setae not confined to a single row on upper margin. The male genitalia which give useful characters for distinguishing the different species, differ from those of *Earomyia* in that the laminate processes on inner side of ninth tergite more closely follow the size and shape of tergite margins, while the anal lamellae project in line with the axis of hypopygium, not at right angles as in *Earomyia*.

Czerny in 1934 distinguished a new subgenus *Tricholonchaea*, based upon a specimen of *L. albitarsis* from Zetterstedt's collection, as differing from *Lonchaea* in having scutellum bristly on disc as well as round margin, mesopleura in front with no evident vertical row of bristles curving forwards, and frontal lunule bare. The scutellum is bristly on disc of some British species of *Lonchaea*, but they have bristles on lunule, and I find it difficult, owing to the great variation in length and strength of bristles on front part of mesopleura, to appreciate Czerny's third distinction. Further it is not stated whether the specimen of *albitarsis* from Zetterstedt's collection was one (or was conspecific with one) of the original types from "Lycksele" or "Turtola." The status of *Tricholonchaea* and the identity of *L. albitarsis* Ztt. remain uncertain.

Lasiolonchaea End. was based upon the character of hairy eyes, which is not of generic value in this family.

3. *Earomyia* Zett. (1842). Type *E. lonchaeoides* Zett. (1848).

Syn. *Spermatolonchaea* Hendel (1932). Type *Lonchaea viridana* Mg. (1826).

Syn. *Chaetolonchaea* Czerny (1934). Type *Lonchaea dasyops* Mg. (1826).

Syn. *Dasylonchaea* Enderlein (1936). A name given to species of *Earomyia* with hairy eyes.

Czerny separated *Spermatolonchaea* from the other two by its narrower jowls below eyes, and narrower cheeks, and included *L. flavidipennis* Ztt. in this subgenus because of its two strong sternopleural bristles. It is fortunate that this latter species is easily recognized by other characters, because the number of sternopleural bristles is by no means constant, moreover it agrees with *L. vaginalis* in having bristles on frontal lunule, in structure of male genitalia, and in having numerous, scattered, smaller bristly hairs on sternopleura in addition to the 1-2 strong bristles. Its correct position is undoubtedly in *Lonchaea* sens. strict. The male genitalia of *Earomyia lonchaeoides* are quite definitely of the same type as those of *Spermatolonchaea viridana*, and these species have the same entirely bare lunule and arrangement of sternopleural bristles in a single row on upper margin only, therefore the width of cheeks and jowls cannot be considered of more than specific importance, and *Spermatolonchaea* must sink as a synonym of *Earomyia*, first described in 1842 (Dipt. Scand. I. 78), not in 1848 as quoted by Czerny. My specimens of *Earomyia lonchaeoides* (in Kowarz's collection under the name of *L. crassinervis* Ztt. from "Asch" (Bohemia) 26.iii.71) do not agree with Czerny's diagnosis of *Earomyia*, because there are usually two strong sternopleural bristles, and the front row of bristles on mesopleurae (especially the upper bristle) are long and upcurved as in *viridana*, the upper bristle being curved forwards. Nevertheless I believe they truly represent *lonchaeoides* Ztt.; they certainly have the wide cheeks and jowls of that species, and the genitalia agree with Hennig's (1948) figure.

Chaetolonchaea dasyops Mg. according to a male in Kowarz's collection collected by Stein at "Halle S." differs in several respects from any species of *Earomyia* as defined above, the hairs on the wide jowls are multiserial in front, sternopleural bristles and hairs not confined to a row on upper margin, there is a cluster of stigmatical bristles behind the propleural instead of the single bristle of *Earomyia*, and none of the bristles on front of mesopleura points forwards. However, the frontal lunule is bare, there are two (sometimes three) strong sternopleural bristles, and the male genitalia are very similar to those of *nigra* Mg.—a slight variation from the *Earomyia*-type. This resemblance in genitalia to *nigra*, coupled with the bare lunule, appears to make it advisable to include *dasyops* Mg. in the genus *Earomyia*, as it was indeed included by Hendel in 1932. Hennig's (1948) *C. dasyops* was probably a different species, at least I cannot make my dissection of the male genitalia agree with Hennig's figure.

It will be noted that I am not in agreement with Czerny and Hennig in considering that the wide jowls of *Earomyia* (type *lonchaeoides* Ztt.) and *Chaetolonchaea* (type *dasyops* Mg.), coupled with (as they believe) an *absence* of forwardly-curved bristles on front margin of mesopleura, can be used for distinguishing these genera from *Spermatolonchaea* (type *viridana* Mg.) with narrow jowls *and presence* of such curved bristles. I find that *lonchaeoides* as I recognize it (and I believe my identification to be the same as theirs) has

at least one long mesopleural bristle curving forwards as in *Spermatolonchaea*, while *nigra* Mg. (included by them in *Spermatolonchaea*) has *no such bristle* (or bristles), though the jowls are *not* wide. I therefore consider it advisable to treat these three generic names as synonyms until more is known about the species, and the uncertainty in regard to the identity of Czerny's specimens of *Chaetolonchaea dasyops* (and consequent correct use of that generic name) has been removed.

I would here add that the genus *Silba* Mcq. from Reunion (L'Isle Bourbon) is a Lonchaeid according to the type in Bigot's collection. The frontal lunule is not entirely bare, there is a very slight keel between antennae which widens out below and fades into the convexity of face, it has two strong sternopleural bristles, while it possesses the unusual character of a few fine hairs on each side margin of prothoracic sternum. The antennae are missing in the type but Macquart figures the arista as shortly plumose.

All species in the Lonchaeidae are superficially very much alike, their number is greater than the work of previous describers indicates, and their distinctive characters, being by no means obvious, have often been omitted from descriptions; as a consequence the difficulty of naming previously described species correctly is very great. This difficulty will not be overcome until all the available type specimens have been examined, an impossible undertaking at the present time. One can only apply the old names provisionally, more fully characterize the species so named, and leave the question of confirmation to future students.

Table of British Genera

1 (4). Lunule with small bristles at least on upper margin.

2 (3). Poststigmatical bristle (or bristles) present. 1-3 strong bristles on front of jowls. No hairs between bristles round margin of scutellum ..... *Dasyops* Rdi.

3 (2). Poststigmatical bristles absent. Jowls without strong bristles in front. Sternopleurals not confined to single row on upper margin..... ..... *Lonchaea* Fln.

4 (1). Lunule entirely bare. Sternopleurals confined to single row on upper margin ..... *Earomyia* Zett.

Dasyops Rdi.

Table of British species

1 (2). Eyes bare. Metatarsi yellow ..... 1. *facialis* n.n. (*albiceps* Frey *nec* Mall.)

2 (1). Eyes hairy. Tarsi all dark.

3 (4). Eyes in male with longer hairs. Only one strong bristle on front part of jowls. Female ovipositor very wide, quite half width of front of frons, and near tip rapidly narrowing to a sharp point....2. *latiterebra* Cz.

4 (3). Eyes in male quite short haired. More than one strong bristle on front part of jowls. Female ovipositor (♀ of *occulta* unknown) narrower.

5 (6). Usually only a single strong poststigmatical bristle. Frons and thorax of male shorter haired, upper postocular ciliation very short. Hind tibiae with an anterodorsal row of 4-5 longer bristles on apical half, much longer in male than tibia is thick, in female at least equal in length to this thickness. Female ovipositor much narrower and more gradually narrowing to a sharp point than in *latiterebra*..... ..... 3. *spatiosa* Beck.

6 (5). Two or three shorter and finer poststigmatical hairs. Frons and thorax of male longer haired, upper postocular ciliation long. Hind tibiae with normal short bristles. Female unknown..... ..... 4. *occulta* sp. n. ♂

1. *D. facialis* n.n. In 1914 Malloch described a *Lonchaea albiceps* from a N. American female, while Frey in 1930 independently gave the same name to a female *Lonchaea* from Finland. Czerny in 1934 considered that these females belonged to the same species, but Malloch described the frons of his species as almost bare with a short, uniserial row of hairs on lower part close to eye margin, and anterior pair of dorsocentral bristles on thorax much reduced in size. These characters do not apply to our British species which is otherwise the only European one with the combination of practically bare eyes and partly yellow metatarsi. The extreme upper part of cheeks (or facial orbits) is shining black, upper postocular ciliation very short, one strong vibrissal bristle (rarely two) towards front of jowls, one propleural and one stigmatical bristle, only one poststigmatical bristle. Genital lamellae as in fig. 1d. Female ovipositor slender.

I possess two males and three females from Scotland (Sutherland and Inverness-shire), a male from Wales (Merioneth), and a female from the New Forest (Hants).

Fig. 1. Side lamellae or paralobes of: a, *Dasyops latiterebra*; b, *D. spatiosa*; c, *D. occulta*; d, *D. facialis*. (Hairs and bristles shown only on lamellae.)

2. *D. latiterebra* Czerny. The most widely distributed British species, occurring from Ross and Cromarty in Scotland to Kent, Hants and Glos. in Southern England. Characters additional to those given in the Table of species will be found under the description of *occulta* n. sp. The lamellae or paralobes of male genitalia bear a remarkable comb of black teeth (fig. 1a).

3. *D. spatiosa* Becker. At present known as British from only one male in Dr. Wood's collection taken either at Cusop Dingle 4.vii.00, or Stoke Wood 3.viii.00 (Herefordshire), and a female taken by myself at Barton Mills (Suffolk) on 26th May, 1911. Becker's description of the male as having "Thoraxbehaarung . . . nur kurz und weitläufig," and "Augen . . . unter der Lupe kurz aber deutlich behaart" appears to indicate that our British species is correctly identified. Other distinctive characters will be found mentioned under the next species. The finger-like shape of lamellae or paralobes of male genitalia (fig. 1b) is very distinctive. *

4. *D. occulta* sp. n. ♂ A species allied to *spatiosa* Beck. but differing as indicated in the Table of Species.

Frons dull and frontal hairs not numerous but long and fine, frons duller and hairs longer than in *facialis*; postocular hairs on upper part of occiput also decidedly longer and finer than in *spatiosa*. Lunule, face and cheeks (facial orbits) densely dusted greyish-white, the last not becoming more shining at junction with frons, these parts more like those of *latiterebra* than of *spatiosa*. Antennae with third joint on inner side not one and a half times as long as wide, rather shorter than in *spatiosa*. Two or three longer vibrissal bristles on front part of jowls, but these are not as strong as in *spatiosa*.

Thorax rather more universally dusted and consequently less shining than in *spatiosa*, finer hairs on dorsum longer, and instead of the 1-2 stronger poststigmatical bristles of *spatiosa* and *latiterebra* there are 2-4 shorter finer hairs; the anterior mesopleural hairs being also short and fine, the *poststigmatical* hairs have the appearance of being a continuation forward at upper corner of the mesopleural pubescence, but they are undoubtedly placed on the same poststigmatical sclerite as the single strong bristle in *spatiosa*; one propleural and one stigmatical bristle above front coxae, not 3-4 of latter as in *latiterebra*.

Abdominal tergites rather densely dusted brownish-grey, especially on a very broad middle band as in the other species. Genital lamellae (fig. 1c) with greater resemblance in shape to those of *facialis*, and very different from those of *spatiosa* or *latiterebra*, but without the bristles at end present in *facialis*.

Legs entirely black, hind tibiae clothed as in *latiterebra* and without the longer anterodorsal bristles of *spatiosa*. Hind tarsi shorter, basal joint especially shorter and rather stouter than in either *spatiosa* or *latiterebra*.

Wings decidedly brownish; stigmal space very short as in allied species. Squamae with blackish margins and dark fringes. Halteres black with brownish stem.

Length about 4 mm.

Described from two typical males taken at Aviemore (Inverness-shire) early in June, 1913, and a male from Barton Mills (Suffolk) caught on 8th June, 1931, when *D. latiterebra* was also taken.

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* Since the above was written I have seen four males and a female taken by Mr. E. A. Fonseca in Gloucester and Somerset, and have been able to compare the drawing (fig. 1b) made from Dr. Wood's male with a dissection of one of Mr. Fonseca's males, thereby proving that a second spine lies hidden below the pointed spine on left of the finger-like process.

Lonchaea Fln.

Table of British species

1 (6). Eyes distinctly hairy.

2 (5). Hairs on front part of jowls not confined to an almost uniserial row on mouthmargin, but widely spread.

3 (4). Tarsi entirely black.....1. *hirticeps* Ztt.

4 (3). Tarsi yellow about base.....2. *nitens* Big. (The European *L. albigena* sp. n. described in this paper comes in here.)

5 (2). Hairs on front part of jowls almost uniserial along mouthmargin. Legs entirely black .....5. *lauta* sp. n.

6 (1) Eyes bare or practically bare.

7 (8). Hairs on front part of jowls not confined to mouthmargin, but widely spread. Scutellum hairy on disc as well as round margin.. .....3. *patens* sp. n. (*L. tarsata*, which is somewhat intermediate in character of hairs on front part of jowls, has no hairs on disc of scutellum, and no hairs above orbital bristle.)

8 (7). Hairs on front part of jowls almost or quite confined to a uniserial row on mouthmargin.

9 (22). Legs entirely black, tarsi not partly yellowish.

10 (21). Squamae with pale-haired fringes.

11 (12). A patch of longer hairs at middle of squamal margin. Usually two strong sternopleural bristles. Female ovipositor with a pair of long hairs at *middle* of last section on upper side....6. *flavidipennis* Ztt.

12 (11). Squamal fringes uniform in length. Only one strong sternopleural bristle.

13 (14). Disc of thorax uniformly but *microscopically* dusted and therefore very faintly dulled.....7. *vaginalis* Fln.

14 (13). Disc of thorax (except sometimes round margin) brightly shining, without even microscopic dusting.

15 (16). Mesopleura and sternopleura mainly brightly polished .... 8. *limatula* sp. n.

16 (15). Mesopleura and sternopleura entirely dulled by microscopic dust.

17 (18). Some hairs on frontal orbits above orbital bristle; more than one stigmatical bristle; female ovipositor with a pair of *long* bristles very close together, above, about half-way along last section, and a *very long* pair below near tip.....10. *Britteni* sp. n.

18 (17). Without above characters.

19 (20). Prescutellar area of thoracic disc not microscopically dusted; last two tergites of male abdomen not dusted. Female with second and base of third abdominal tergites dulled by dust..11. *postica* sp. n.

20 (19). Prescutellar area dusted; male abdominal tergites all dusted. Female with second, third and base of fourth abdominal tergites dulled by dust .....9. *contigua* sp. n.

21 (10). Squamae with dark fringes. Thorax and pleurae dulled by microscopic dust. All male abdomen also dulled. First four abdominal tergites of female dulled except at sides.....12. *Deutschi* Ztt. (If hairs are present on disc of scutellum, thoracic disc not entirely dusted, several stigmatical bristles, and some hairs on frontal orbits above orbital bristle, see *lauta* ♀.)

22 (9). Legs with tarsi at least partly yellowish.

23 (24). Palpi large and long, projecting well beyond epistoma. Tarsi extensively yellow ..... 13. *palposa* Ztt.

24 (23). Palpi normal.

25 (26). Somewhat large species with broad *shining* facial orbits..... ..... 16. *peregrina* Beck.

26 (25). Facial orbits not brightly shining.

27 (28). A more shining, scarcely dusted species with a patch of longer hairs in squamal fringes and entirely yellow tarsi. Abdominal sternites shining ..... 14. *Zetterstedti* Beck.

28 (27). Not as above.

29 (32). Squamal fringes (as in previous three species) pale.

30 (31). Thoracic hairs longer, only basal joint of tarsi pale, no hairs behind strong sternopleural bristle.....15. *scutellaris* Rdi.

31 (30). Thoracic hairs shorter, tarsi entirely pale, some hairs behind strong sternopleural bristle.....17. *cariecola* Cz.

32 (29). Squamal fringes dark.

33 (42). Antennae long, extending to mouthedge. Male hypopygium not long and slender.

34 (35). All joints of tarsi, except last one, clear yellow.... 18. *ultima* sp.n.

35 (34). Last two or three joints of tarsi at least partly darkened.

36 (37). Disc of scutellum usually hairy; basal joint of all tarsi rather obscurely yellowish; only one stigmatical bristle; often hairs in notopleural depression; often hairs on frontal orbits above orbital bristle ..... 19. *obscuritarsis* sp. n.

37 (36). Disc of scutellum bare; tarsi more distinctly yellowish on basal joint.

38 (39). Wings whitish. Stigmal space short, measured on lower side of costa not twice as long as middle crossvein.....4. *tarsata* Fln.

39 (38). Wings either not whitish, or if whitish stigmal space quite twice as long as middle crossvein.

40 (41). Frons and thorax with longer hairs; more than one stigmatical bristle; only basal tarsal joint yellowish.....20. *laxa* sp. n.

41 (40). Frons and thorax shorter haired; only one stigmatical bristle; first 2-3 joints of tarsi yellowish ..... 21. *laticornis* Mg.

42 (33). Antennae shorter, not extending to mouthmargin. Male hypopygium long and slender ..... 15. *scutellaris* Rdi.

The first three British species and *albigena* described below possess a distinctive arrangement of hairs on mouthmargin and jowls (between mouth opening and eyes). Usually, as for instance in *vaginalis*, the hairs on mouthmargin are continued in a single row well beyond where the scattered hairs on jowls cease, but in this small group the two sets of hairs are conterminous, those on jowls being continued further forward than usual. In addition, while they possess the usual one propleural bristle, there are nearly always several stigmatical bristles, and the disc of scutellum bears some bristly hairs. The last two characters are not, however, confined to species of this small group, and, further, there may be some doubt concerning the hairs on jowls in *tarsata* Fln. In Czerny's Table of subgenera these four species would appear to fall into his new subgenus *Tricholonchaea*, in fact at one time I thought it possible that Czerny had made a mistake in assigning to the genotype (*L. albitarsis* Ztt.) the character of a bare lunule, and that my new species, *L. patens*, with bristles on lunule, was identical with *L. albitarsis* (Ztt.) Czerny. In *patens*, however, the bristles on lunule are not confined to upper margin as in the genus *Dasyops*, and can scarcely have been overlooked. The genitalia of the four species in this small group offer no support whatever to a view that the character of the peristomal bristles is of generic value.

1. *L. hirticeps* Zetterstedt. This little known species may be recognized among this group by its entirely black tarsi.

♂. A very long haired species resembling *nitens* Big. but differing from the description of that species as follows: Eye hairs rather shorter, sparser and darker. Thorax with only one fine stigmatical bristle similar to the propleural. In the single specimen available scutellum is devoid of all bristles and hairs, evidently rubbed off. Genitalia apparently resembling those of *lauta*, at least of rounded, not elongate, type (those of *nitens* appear to be of similar type). Tarsi entirely black. Wings rather whitish on posterior half; stigmal section of costa long; middle crossvein only very slightly beyond end of mediastinal vein.

♀. Eyes obviously hairy. Whole of thoracic disc slightly dulled by microscopic brownish pile. Abdomen similarly dulled on first and second, third (except at sides), and on basal margin about middle of fourth, tergites. Last section of ovipositor with a number of shorter bristles in addition to the longer bristles of *patens*, giving it a more hairy appearance. Stigmal section of costa measured on lower margin nearly four times length of middle crossvein, this latter slightly beyond end of mediastinal vein. In the larger female of my four specimens there are more than one stigmatical bristle, but only one in the smaller specimens. Some hairs on disc of scutellum (at least about tip). Front row of bristles on mesopleura not particularly strong.

There is a male of this species in Dr. Wood's collection, from Herefordshire. I caught the larger female near Grantown (Inverness-shire) 10.vi.13, and the smaller females at Aviemore (Inverness) 9.vi.13, Kennett (Cambs.) 16.v.16, and Parnholt Forest (Hants) 24.v.31.

Zetterstedt described the male as having wings "leniter subfuscanis" and middle crossvein opposite end of subcostal vein. Czerny the wings as "etwas gebraunlich" and position of middle crossvein extremely variable. The species evidently requires further study based upon more material.

2. *L. nitens* Bigot. A long haired species certainly belonging to same group as *hirticeps* and *patens*, eyes densely hairy, tarsi pale about base.

♂. (The type redescribed.) Eyes densely long, brownish, haired. Frons narrow, opposite front ocellus compared with width of one eye as 7 : 10, narrower above antennae; hairs very long, those on upper part very little differentiated in length and strength from orbital bristles; ocellar bristles very long; some hairs on orbits above orbital bristle. Face not sufficiently densely dusted greyish to hide shining black ground colour; cheeks dusted rather more brownish-grey, narrow above, widening out below into the wide, densely and very long haired, jowls or buccae; the hairs on front part of jowls spread upwards to slightly above the line of front margin of epistoma. Antennae as long as middle line of face, and about two and a half times as long as wide.

Whole of thorax including disc somewhat dulled by microscopic brownish-grey pile, as usual more evident when viewed from in front; all pubescence long and dense including some on disc of scutellum, numerous long sterno-pleural hairs including some behind and above the single strong bristle; more than one stigmatical bristle. No hairs in notopleural depression, only the usual two strong bristles.

Abdomen also long haired, and almost all disc somewhat dulled like thorax, less so on last tergite, and sides of previous three tergites. Sternites rather dull, connecting membrane quite dull.

Legs pubescent, some long hairs beneath hind femora about base; first 2-3 joints of all tarsi rather obscurely yellowish.

Wings hyaline but scarcely whitish, veins yellowish, browner at base of wing. Stigmal section of costa long, quite four times length of middle crossvein, which is opposite end of mediastinal vein. Squamae with dark margins and fringes. Halteres black.

♀. (British.) Pubescence everywhere much shorter, but not so short as in some species. Eyes still obviously hairy. Frons shining satin-like, and about half width of head, pubescence short and fine in contrast to usual bristles which are long and strong. Third antennal joint rather broader. Thoracic and abdominal pubescence shorter. Abdomen dulled as in *hirticeps* ♀ and ovipositor similar. Only short hairs beneath base of hind femora.

Length of male type nearly 4 mm. Females 3-4 mm.

One female was taken by Col. Yerbury at Porthcawl (Glamorgan) 22.v.03, two others by myself at Barton Mills (Suffolk) 25.v.15 and 7.v.40, one at Frame Wood (Hants) 29.v.39, and another at Chippenham Fen (Cambs.) 20.vi.50. It is possible that *L. Krogerusi* Cz. described from females only may be a synonym.

L. albigena sp. n. ♂. (Continental species.) Two males in Kowarz's collection under the name *L. hirticeps* Zett. taken by Stein at Genthin in April are very much like *nitens* Big., differing only as follows: *Cheeks and face silvery-grey*. Third antennal joint rather broader. Hairs on jowls not quite so long. *Some hairs in notopleural depression* immediately above posterior bristle. Middle crossvein rather beyond end of mediastinal vein. Genitalia fig. 6.

Length 4.5 mm.

Figs. 2-8. Hypopygia of: 2, *Earomyia nigra* (tergite only); 3, *E. viridana*; 4, *E. virilis*; 5, *E. schistopyga*; 6, *Lonchaea albigena*; 7, *L. patens*; 8, *L. lauta*.

3. *L. patens* sp. n. ♂ ♀. Species with practically bare eyes; hairs on jowls and mouthmargin conterminous, and tarsi yellow about base.

♂. Head wide; frontal width opposite front ocellus compared with width of one eye about as 7 : 11, narrower in front; frons dull except on vertex about base of all long bristles, and these bristles exceptionally long; some hairs on orbits above orbital bristle. Face very wide below, facialia (or facial orbits) opposite front mouthmargin wider than usual, wider than third antennal joint, dusted rather brownish on middle part of lower half; face black, the slight greyish dusting not sufficient to entirely hide the shining ground colour. Antennae practically as long as middle line of face, third joint quite three times as long as broad. Hairs on front part of jowls below eyes almost as long as jowls are wide, but not continued upwards above level of front margin of epistoma. Palpi narrower than usual, not wider than first antennal joint.

Thoracic disc obviously shining with microscopic brownish pile only present on side margins (where it is very inconspicuous), on a transverse prescutellar band, and on scutellum; pleurae all similarly pilose though very inconspicuously so on some parts. The usual strong bristles present, but general pubescence very long and dense, and some long hairs on disc of scutellum as well as between marginal bristles. Several stigmatical bristles but only one propleural. No great difference in length and strength of front row of bristles on mesopleura from those behind them. Numerous long bristly hairs on sternopleura including some above and *behind* the single strong bristle.

Abdomen broadly ovate, fifth (last apparent) tergite not longer than fourth; microscopic brownish pile rather obvious on first and second tergites, much less distinct on third (which is shining at sides), and on a narrow band at base of fourth tergite. Hypopygium (fig. 7) of the *vaginalis* type but with exceptionally large anal lamellae.

Legs more hairy than usual, especially some hairs behind front tibiae much longer than tibia is wide. First and greater part of second joint of all tarsi yellowish, obscurely so seen from above partly due to the numerous black hairs.

Wings whitish with yellow veins, though those about base of wing and on outer quarter of costa are darker; base of wing distinctly yellowish to slightly beyond humeral crossvein. The yellowish stigmal space rather long, about three and a half times as long as middle crossvein, this latter about opposite end of mediastinal vein. Squamae with blackish marginal fringe.

♀. Differing from male as follows: All pubescence everywhere shorter. Frons much wider and more equal in width, compared with width of one eye about as 19 : 17, all shining, satin-like. Antennae rather longer than middle line of face. Palpi broader. Thoracic pubescence much shorter, upper 2-3 bristles of front row on mesopleura rather stronger than others behind them, the single strong sternopleural bristle much longer than the hairs. Abdomen more extensively shining, microscopic pile present only on first tergite, on second except broadly at sides, and on extreme base about middle of third tergite. Pubescence shorter than in male but more conspicuous than in most females. Ovipositor of the narrow *vaginalis* type and with similar hairs, i.e. close to base of apical section on upper side a pair

of very long hairs, near tip above a pair of shorter (though longer than in *vaginalis*) hairs, and another longer pair beneath near tip; penultimate section with quite short fine hairs in a row on each side above and another row beneath.

Length variable, 4-5.5 mm. (one female little more than 3 mm.).

Described from 2 ♂ 7 ♀. A pair (typical) taken by myself at Ham Street Woods (Kent) 31.v.36 and a male at Porthcawl (Glamorgan) by Col. Yerbury 16.vi.03. Other females have been taken by me at Chippenham Fen (Cambs.) 8.vi.21, 24.vii.32 and 20.vi.42, at Butley Thicks (Suffolk) 6.vi.10, on a window of my house at Newmarket (Suffolk) 3.vii.31, at Aviemore (Inverness) 4.vi.13, and in Glamorgan by Mr. E. A. Fonseca, while Mr. Verrall caught a female at Bettws-y-Coed (Caernarvon) 14.vi.87, and Mr. C. H. Wallace Pugh a female at Oswestry (Shropshire) 7.vi.34.

4. *L. tarsata* Fallén. This species approaches the above *hirticeps* group in the arrangement of hairs on jowls. There is no conspicuous single row of hairs on mouthmargin in front of the hairs on jowls as in, for instance, *vaginalis* Fln., but these latter gradually become less numerous towards the front until they end in one on mouthmargin. It also differs in having no hairs on disc of scutellum, only one stigmatical bristle, no hairs above or behind the strong sternopleural bristle, and other hairs on sternopleura less numerous than usual, the front row of bristles on mesopleura rather stronger, and stigmal section of costa much shorter. In the male (which in my experience is much more frequently found than the female) the wings are conspicuously whitish, and anal lamellae of genitalia much larger and more oval in shape than usual (fig. 16). In the female the wings are pale yellow, not whitish, and the ovipositor bears a number of hairs as in *hirticeps*.

Length variable from 2.5 to 4.5 mm.

The males of this species may sometimes be found in large numbers performing a mad dance in the hot sunshine in a sheltered corner among bushes.

5. *L. lauta* sp. n. ♂ ♀. A species having more than one stigmatical bristle, bristly hairs on disc of scutellum, and hairs above and behind the strong sternopleural bristle as in *hirticeps* group, but hairs on front part of jowls confined to mouthmargin, and stigmal section of costa very short.

♂. Eyes distinctly pale haired. Frons narrow, width opposite front ocellus compared with that of one eye about as 17 : 26, narrower in front; dull black except at vertex; pubescence long, hairs on upper orbits only a little shorter than orbital bristles, some hairs on these orbits *above* orbital bristle. Face and cheeks slightly dusted greyish, but not enough to obscure (at least from some points of view) the shining black ground colour. Jowls only a little wider than third antennal joint. Antennae about as long as centre line of face, third joint about two and a half times as long as wide.

Thoracic disc shining but slightly obscured by brownish dust all round margin (including across front and across prescutellar area) and on scutellum; all pleurae similarly obscured. Quite a cluster of stigmatical bristles; bristles of front row on mesopleura only slightly stronger than those behind them; one or two isolated hairs in notopleural depression above posterior notopleural bristle. Hairs on thorax and abdomen rather long.

Abdomen very slightly dusted on first and second tergites, third and fourth (except at sides), and about basal margin except at sides of fifth tergite, this latter distinctly longer than fourth. Hypopygium with a finger-like projection from laminate inner process close beneath anal lamellae (fig. 8).

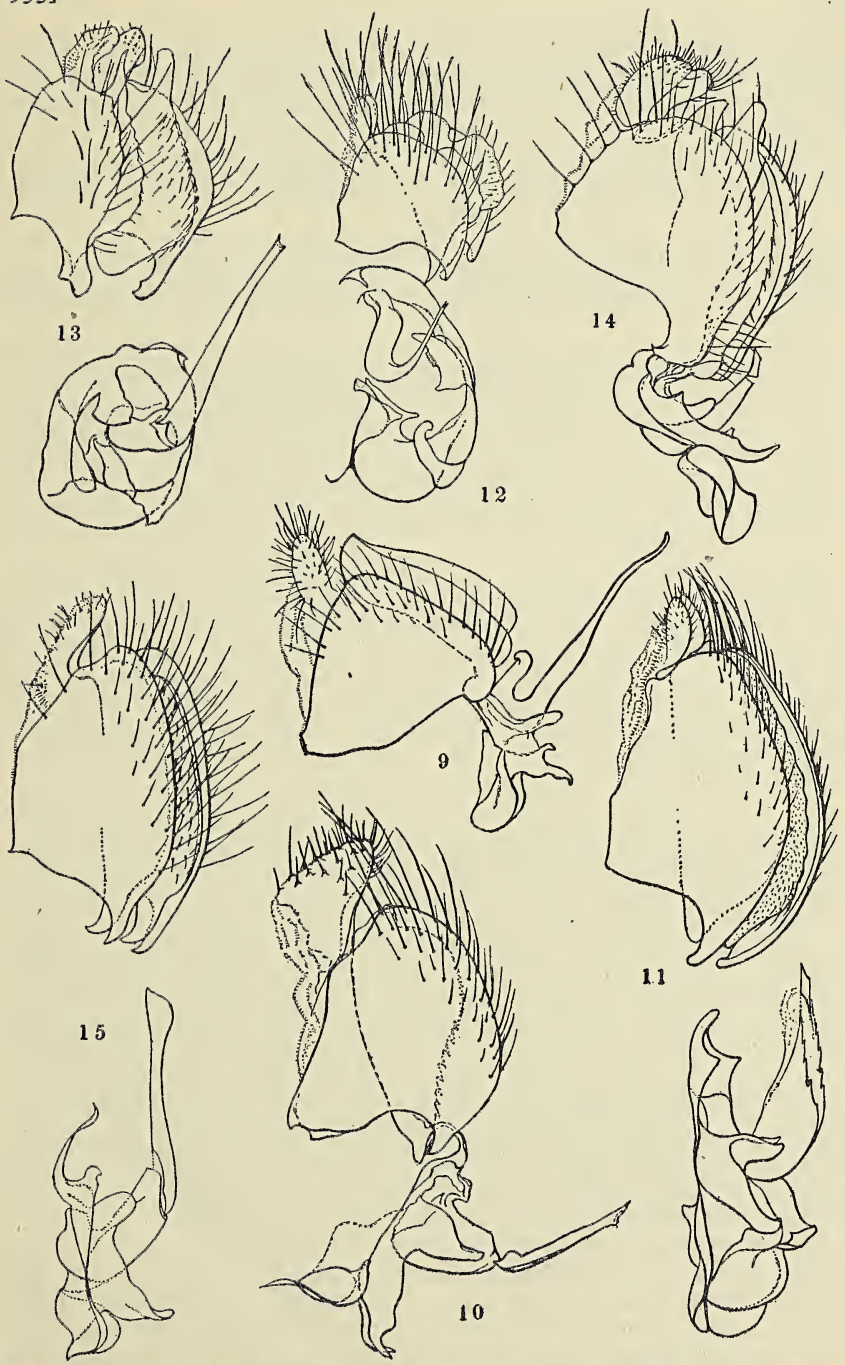
Legs rather distinctly hairy, tarsi entirely dark. Wings slightly yellowish with yellow veins, stigmal section of costa, measured on lower side, scarcely twice length of middle crossvein, which is about opposite end of subcostal vein. Squamae with dark margins and fringes. Halteres black.

♀. Resembling male but much shorter haired everywhere. Eyes only microscopically hairy, easily passed as bare. Frons short-haired, rather less than one-third width of head, shining satin-like seen from above, but slightly dusted viewed from in front. Antennae, as usual, rather longer and decidedly wider, third joint considerably wider than jowls. Thorax as in male except for shorter hairs everywhere and very inconspicuous dusting round margin. Abdominal dusting very slight on third tergite, and only present on extreme basal margin of fourth. Ovipositor with a pair of *very* long hairs, above, half-way along last section, a pair rather long beneath near tip, and another shorter hair on each side at about same distance from tip. *No other hairs on this apical section.* Legs, wings, etc., as in male.

Length 4.25-4.5 mm.

Described from three pairs taken as follows: A typical pair by myself, the ♂ at Aviemore (Inverness) 8.vi.13, the ♀ on a window of my house at Newmarket (Suffolk) 21.vi.40. A male taken by Rev. Tuck of Tostock (Suffolk) 15.vii.01. A male by Col. Nurse in Ashdown Forest (Sussex) in June, 1922. A female by Dr. J. H. Wood on a window at Tarrington (Hereford) 23.viii.03, and a female taken by Mr. A. H. Hamm at Shotover, near Oxford, in May, 1912.

6. *L. flavidipennis* Zetterstedt, and 7, *vaginalis* Fallén (*chorea* F. of some authors). These are two very common species belonging to a group of six British species all of which have entirely black legs and pale-fringed squamae. I do not use the name *chorea* F. for *vaginalis* Fln. because Fabricius described his species as having "alis totis albis"; there are species of *Lonchaea* with white wings but *vaginalis* is not one of them. The above two common species should be easily recognized. Apart from the characters given in the "Table" the males of both species and the females of *vaginalis* have the whole of thoracic disc slightly dulled by microscopic dust, but this dusting is not present on middle of disc in *flavidipennis* females; in *vaginalis* the terminal section of female ovipositor has a pair of long hairs *at its base* above, in *flavidipennis* this pair of hairs is at middle of the section; *vaginalis* has no hairs on frontal orbits above the orbital bristle, in *flavidipennis* they are present; there are hairs behind the single strong sternopleural bristle in *vaginalis*, none behind the two (rarely only one) strong bristles in *flavidipennis*. The male genitalia of the two species are very different; the penis is jointed to a stout basal part in *vaginalis* (fig. 10), but is tubular and entire in *flavidipennis* (fig. 9), anal lamellae larger, and laminate internal plate which has a denticulate margin is entirely concealed within the "shell" of hypopygium in *vaginalis*, while it has a simple margin and extends beyond the "shell" in *flavidipennis*, also on inner side of end of these plates, low down



Figs. 9-15. Hypopygia of: 9, *Lonchaea flavidipennis*; 10, *L. vaginalis*; 11, *L. limatula*; 12, *L. contigua*; 13, *L. Britteni*; 14, *L. postica*; 15, *L. palposa*.

near base of anal papillae, there are several short, stout, slightly curved black spines not present in *vaginalis*. I have seen specimens of *flavidipennis* bred from Parsley stems from Bedfordshire, and from stems of Henbane from Hertfordshire.

I would call attention to the fact that the figure given by Séguy (1934) on p. 171 of his "Muscidae Acalypterae" as the hypopygium of *Lonchaea chorea*, is certainly that of a species of *Dasyops*.

8. *L. limatula* sp. n. ♂ ♀. Peristomal bristles uniserial in front. Legs entirely black. Squamal fringes pale. Lower front part of mesopleura and greater part of sternopleura brightly shining without even microscopic dusting.

♂. Shorter haired everywhere than usual. Frons in front rather less than half width of one eye*, rather wider above, somewhat dull except about long bristles on vertex, but when viewed from in front appearing dusted brownish-grey, its pubescence very short for a male. No hairs on orbits above orbital bristle. Jowls in front about as wide as third antennal joint, narrower at middle (below eye). Antennae almost as long as centre line of face (not including clypeus), third joint about twice as long on inner side as wide, sometimes reddish about base.

Thoracic pubescence short for a male. Disc of thorax brightly shining, microscopically pilose only on humeri, narrowly above notopleural suture (not including whole area of notopleural depression), more broadly across prescutellar area, and on scutellum; lower front part of mesopleura, and sternopleura (except below and on upper hind corner) brightly shining. One propleural and only one stigmatical bristle above front coxae; no hairs behind the single strong sternopleural bristle. Some hairs between marginal scutellar bristles only.

Abdomen broadly ovate, and when viewed from in front dulled by microscopic dust on first four tergites (except at sides of third and fourth) and very narrowly on basal margin of fifth, this last tergite slightly longer than fourth. Hypopygium longer than broad with small anal lamellae, no projections to inner laminate process, and a remarkable penis (fig. 11). Legs entirely black.

Wings with stigmal section of costa short, and middle crossvein about opposite middle of same. Squamae yellow with pale fringes. Halteres black.

♀. Resembling male more than usual. Frons at middle about width of one eye. Antennae as usual rather longer and wider, jowls as a consequence narrower in proportion to width of third antennal joint. Frontal and thoracic hairs very little shorter than in male. Abdomen dulled as in male on first three tergites and basal margin of fourth; apical half of second tergite at sides shining, the shining area extending triangularly along hind margin, a similar shining area on third tergite includes almost the whole side margin. Apical section of ovipositor with a pair of *very short* hairs above at base, and a pair of longer hairs near tip beneath. Legs, wings, etc., as in male.

Length about 4.5 mm. (varying from 3.5 — 5 mm.).

This species was first taken by Dr. Sharp and C. G. Lamb in the New Forest (Hants), where, more recently, I found plenty of females round

* In the bred specimen, which is immature, the frons appears much narrower due to shrinkage. Allowance must always be made for this in such specimens.

decaying Beech trees in Mark Ash Inclosure; the same sex has, however, been taken on windows here at Newmarket (Suffolk), at Oswestry (Shropshire) by Mr. C. H. Wallace Pugh, and in Gloucestershire by Mr. E. A. Fonseca. Of males I possess only two, one (typical) from the New Forest labelled as "bred" by Dr. Sharp in 1908, and one taken by myself at Congie, Strathglass (Inverness-shire), on 21st July, 1936, of which the genitalia is figured.

9. *L. contigua* sp. n. ♂ ♀. Allied to *limatula* but whole of mesopleurae and sternopleurae microscopically dusted. Antennae rather short, third joint about twice as long as broad. Prescutellar area of thoracic disc microscopically pilose.

♂. Frons narrow, especially in front; at front ocellus its width compared with width of one eye about as 11 : 16, dull except about vertex; pubescence comparatively short, in great contrast to strong bristles. Cheeks and face slightly obscured by greyish dust. Jowls opposite front mouthedge not so wide as third antennal joint; multiserial bristles thereon occupying only a short space behind, with a single row of 6-7 bristles on mouthmargin towards front. Antennae not so long as centre line of face. No hairs on frontal orbits behind orbital bristle.

Thoracic disc shining about middle, but front and sides very slightly dulled by microscopic pile, prescutellar area and scutellum more distinctly so. Pleurae all slightly dulled. About 7-9 bristles in each dorsocentral row stand out above other pubescence, the posterior three being successively longer towards rear; there are also several longer bristles than usual in front of the inner prescutellar pair. Disc of scutellum without small bristles but some on margin between the usual strong ones. No bristles behind the strong sternopleural one, and only one propleural and one stigmatical above front coxae.

Abdomen microscopically dusted on all tergites, the fifth only slightly longer than fourth. Hypopygium (fig. 12) small and short, anal lamellae very small, laminate processes on inner side of shell with a semicircular excision near end towards anus, penis (without joint) evenly upcurved between two guides, the edge of each guide where penis passes bearing a small pad.

Wings clear, stigmal section of costa, measured on lower side, very little more than twice length of middle crossvein, which is variable in position though usually slightly beyond end of mediastinal vein. Squamae with pale yellow margins and whitish fringes. Halteres black.

♀. Frons much wider, at middle about one-third width of head, slightly dull. Pubescence shorter. Antennae as usual rather longer and wider, extending to lower margin of face. Thoracic hairs and bristles shorter, particularly dorsocentrals in front of usual two strong prescutellar pairs not conspicuous though a third bristle may be distinct; also prescutellar acrostichals (except usual one strong pair) not conspicuous. Abdomen microscopically dusted on first, second, third (except at sides) and basal margin about middle of fourth tergite. Ovipositor with a pair of upright hairs near base of last section above, a rather stouter hair of about same length on each side beneath near tip, and a pair of very minute hairs close to tip above.

Length 3.5-4 mm.

Described from two typical males taken by myself at Barton Mills (Suffolk), another male from Chippenham Fen (Cambs.), and females from the latter locality, on windows of my house (Suffolk), the New Forest (Hants), and Crowborough (Sussex). Other males have been taken by Mr. H. W. Andrews in Kent, Mr. A. H. Hamm near Oxford, Dr. O. W. Richards in Bucks, and Mr. H. Britten in Cheshire.

10. *L. Britteni* sp. n. ♂ ♀. Peristomal bristles uniserial for short space in front. Legs entirely black. Squamae with pale fringes. Several hairs on frontal orbits behind strong orbital bristle. Ovipositor of female with a pair of *long* hairs very close together above, about half-way along last section, and another pair of *very long* hairs below near tip.

♂. Frons with rather long hairs, most of them as long as frons is wide; several hairs on frontal orbits above orbital bristle; width of frons opposite front ocellus compared with width of one eye about as 7 : 12, narrower in front.

Thoracic disc somewhat dusted in front and on sidemargins but not in front of scutellum. Only the usual two strong pairs of prescutellar dorsocentrals, and one pair of similar acrostichals, other hairs behind all fine, in marked contrast to those of *contigua*, and finer than those of *postica*. Scutellum microscopically pilose with some hairs on margin between bristles, those near tip tending to encroach on disc. Pleurae all dusted. One propleural, but more than one stigmatical, bristle. One or two hairs behind the usual single strong sternopleural bristle.

Abdomen apparently dusted on all tergites, though less so at sides towards tip. Fifth tergite half as long again as fourth. Hypopygium (fig. 13) short, anal lamellae small, laminate processes within "shell" with a projection at end nearest anus; penis with a joint near base.

Legs entirely black. Wings almost clear but yellowish about base. Stigmal section of costa short, as in all this group; middle crossvein almost opposite middle of stigma. Squamae with yellow margins and pale fringes. Halteres black.

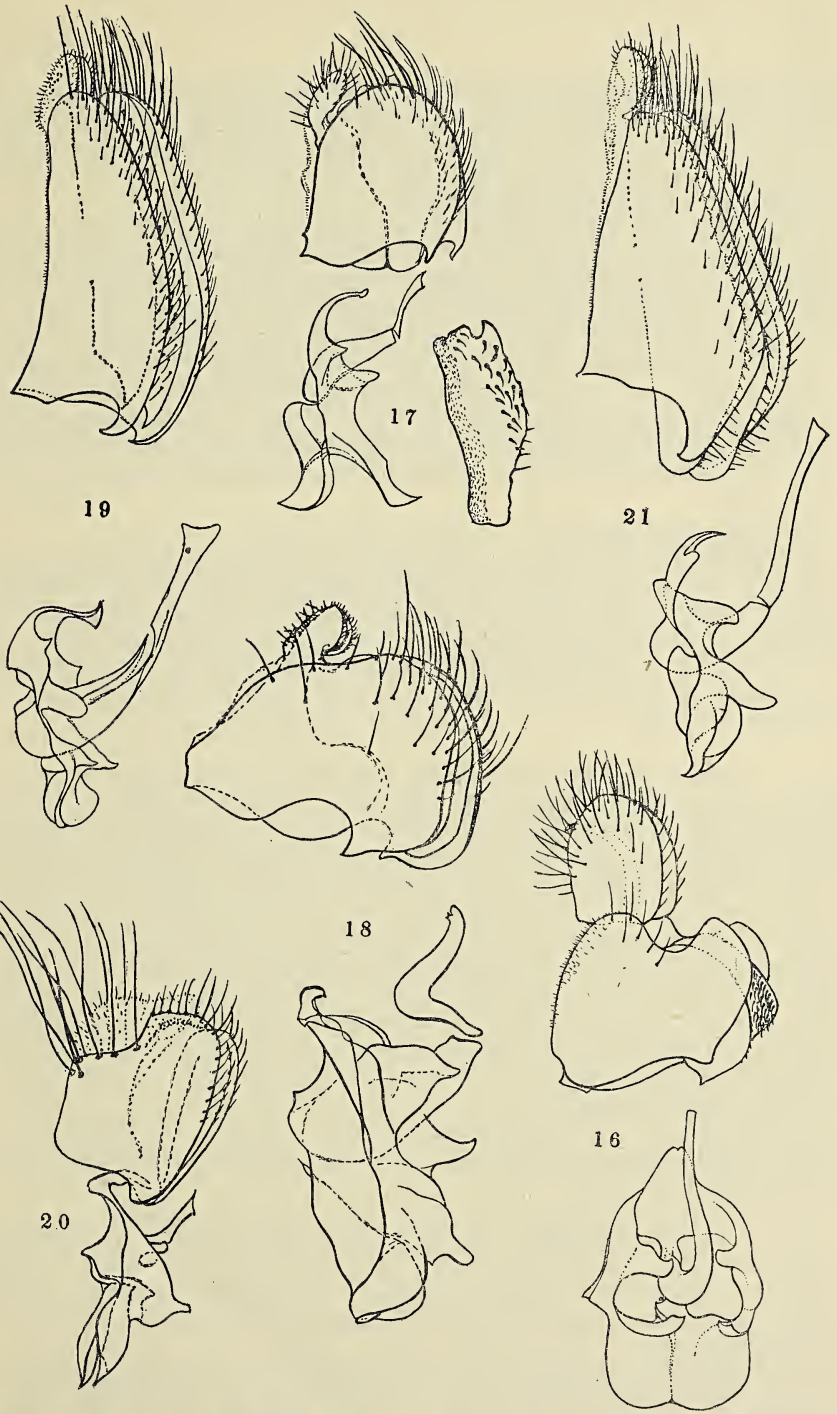
♀. Frons, as usual, wider, its pubescence shorter; third antennal joint longer and broader. Abdomen with at least first four tergites extensively dusted. It may be distinguished from any other species of this group by the hairs on orbits above orbital bristle, presence of more than one stigmatical bristle above front coxae, and remarkable hairs on ovipositor.

Length about 4 mm.

Described from one male and five females bred by Mr. H. Britten in 1928 from pupae found under Beech bark at Bacup (Lancs.), the insects emerging from 12th to 27th of April.

11. *L. postica* sp. n. ♂ ♀. Peristomal bristles in single row in front. Legs entirely black. Squamal fringes pale. Third antennal joint rather longer than in *contigua*, and area around prescutellar thoracic bristles not microscopically pilose.

♂. With the characters of *contigua*, except frons slightly wider; peristomal bristles finer and those in front shorter and placed closer together. Antennae longer, extending to lower margin of face, third joint obviously longer and wider.



Figs. 16-21. Hypopygia of: 16, *Lonchaea tarsata*; 17, *L. Deutschi*; 18, *L. Zetterstedti*; 19, *L. scutellaris*; 20, *L. peregrina*; 21, *L. cariecola*.

Thorax with prescutellar area dulled by microscopic pile only in front of basal angles of scutellum, central part shining. Bristles in front of usual two pairs of long dorsocentrals and one pair of acrostichals only hair-like though some of them are longer than pubescence on rest of thorax. Usually 1-2 hairs behind the strong sternopleural bristle.

Abdomen not entirely dusted, the sides of third, nearly all fourth, and fifth tergite (except perhaps on extreme basal margin) without dust or pile. Hypopygium (fig. 14) very different, inner laminate processes with a projection at end, and penis jointed, the end portion apparently very short.

Wings with middle crossvein usually opposite end of mediastinal vein.

♀. Frons at middle rather more than one-third width of head but slightly narrower in front. Antennae longer and wider, extending below lower margin of face. Thorax as in male but pubescence shorter. No hairs behind strong sternopleural bristle. Abdomen dusted only on first, second and base of third tergite. Hairs on last section of ovipositor much shorter, basal pair above very minute.

Length 3.5-4.5 mm.

Described from three males, two (typical) taken by myself at Barton Mills (Suffolk) on 9th May, 1939, and one by Mr. L. Parmenter at Limpsfield (Sussex) on 7th May, 1939. Four of the seven females in my collection were taken on windows of my house here at Newmarket, one at Barton Mills, one at Butley (all in Suffolk), and one at Snailwell (Cambs.). Dr. O. W. Richards has taken a male at Cothill (Berks.) in July, and Mr. E. A. Fonseca in Somerset in June.

12. *L. Deutschi* Zetterstedt. The only British species with practically bare eyes, entirely black legs and dark fringed squamae. Further distinguished by the whole thorax being slightly dulled by microscopic brownish pile as in *vaginalis*. This last character prevents confusion with the female of *lauta* in which the eyes might be mistaken as bare, an additional distinction being the single stigmatical bristle compared with the cluster in *lauta*. Male hypopygium (fig. 17) quite distinct, the inner laminate process (normally hidden within shell but figured separately) without projection but only a small semicircular excision at tip, and penis much shorter. Female ovipositor with a pair of long and rather strong bristly hairs close together near, but not at, base of last section above, and near tip with a pair of very short fine pale hairs above, and a pair of longer (but not so long as those near base) pale hairs below.

This species is not uncommon in Britain, ranging from Hampshire in the south to Sutherland in the north. I have seen specimens bred from pupae found under Oak bark.

13. *L. palposa* Zetterstedt. Another species easily recognized by its long projecting palpi (which are also much shorter haired than usual) coupled with the yellow first 2-3 joints of all tarsi. The anal lamellae of male hypopygium (fig. 15) are small, inner laminate process without projections, and penis jointed.

Most of my specimens were taken in my garden, or on windows of my house here at Newmarket (Suffolk); Mr. Verrall took a specimen in 1867 in his brother's garden at Denmark Hill, London; and Mr. F. Jenkinson one in his

house at Cambridge. Mr. H. W. Andrews has bred it from larvae found under birch bark (locality unknown), and Dr. O. W. Richards from pupae found under hawthorn bark at Black Park (Bucks.).

14. *L. Zetterstedti* Becker (*laticornis* Zett. *nec* Mg.). I believe my specimens of this species to be correctly named, though neither Becker nor Czerny mentions one of its distinguishing characters, viz. the extra long hairs at middle of squamal margin. It is more shining than usual, even disc of scutellum is devoid of microscopic pile; tarsi mainly yellow, even last 2-3 joints being only brownish. Wings very yellowish. Genitalia fig. 18. The pair of hairs at base of last section of ovipositor above, very minute; the only distinct hairs being a pair beneath near tip.

My specimens are mainly from Scotland taken in June and July, but Mr. Britten has a male taken in the Chew Valley (Yorkshire) on 20th April, 1921, and I have found it in some numbers at Worlington (Suffolk) in April and May.

15. *L. scutellaris* Rondani. This species is usually included among those with pale-fringed squamae but I have seen specimens with brownish fringes which are otherwise indistinguishable, such specimens differ from any British species with dark fringed squamae in having shorter antennae, while the male hypopygium (fig. 19) is long and narrow, and the only noticeable hairs on female ovipositor are a pair of short ones near tip beneath.

It is not an uncommon species and one of the many taken on the windows of my house here at Newmarket (Suffolk).

16. *L. peregrina* Becker. Easily recognized by its wide, *shining*, cheeks (or facial orbits). It is also one of the largest species, and has a cluster of stigmatical bristles above front coxae. Genitalia fig. 20. Last section of female ovipositor at base above with a pair of *very* short hairs, near tip above a pair still smaller, but the pair below near tip are as long as the section and stouter than usual.

I can record only three additional females to the one from Landwade (Cambs.) mentioned in 1911, viz.: one taken by Col. Yerbury at Spey Bridge, Grantown (Inverness), on 8th August, 1911, one by Mr. J. J. F. X. King at Nethy Bridge (Inverness) on 28th August, 1911, and one by Mr. E. A. Fonseca near Bristol (Glos.) on 20th May, 1947. There are a number of bred specimens in Bigot's collection evidently sent to him by some correspondent because they bear a label "*Lonchaea tarsata* ou *parvicornis* Meig. sous l'Ecor de peupler. Pour vous." They were placed by Bigot under the name *Teremyia laticornis* Mg., the name under which Perris in 1839 recorded specimens bred from larvae found under the bark of various dead trees, including Poplar, and may be some of these bred specimens, but Macquart's type of *Teremyia* had much more obviously pubescent arista.

17. *L. cariecola* Czerny. A species very much like *scutellaris*, having the same long type of male hypopygium, but distinguished at once by the entirely yellow tarsi. Antennae also slightly shorter and broader; jowls below eyes slightly wider; sternopleura with several hairs behind the single strong bristle; wings clearer yellow, not brownish-yellow; squamae whiter with paler fringes. Male hypopygium rather broader about base (fig. 21),

penis longer, especially apical section. The position of middle crossvein in British specimens is not as stated by Czerny opposite end of mediastinal vein, but well beyond same.

Both sexes have occurred on the windows of my house here at Newmarket (Suffolk). Other records are from Barton Mills and Aldeburgh (both in Suffolk), Thornton Heath (Surrey) taken by Mr. Parmenter, Iffley, near Oxford, taken by Mr. A. H. Hamm, Herefordshire by Dr. Wood, Nethy Bridge (Inverness) by Mr. J. J. F. X. King, Cheshire taken by Mr. H. Britten, and Gloucester by Mr. E. A. Fonseca.

The last group consists of species with dark fringed squamae and partly pale tarsi, which have long, or very long, third antennal joint. Czerny recognized only two species, *laticornis* Mg. and *tarsata* Fln., but I have dealt with the latter elsewhere, and distinguish three other British species in addition to *laticornis*.

18. *L. ultima* sp. n. ♂ ♀. Third antennal joint long. Squamae with dark fringes. Tarsi with first four joints obviously yellow, last joint contrastingly deep black.

♂. Frons dull except about bases of strong bristles on and near vertex. Width opposite front ocellus compared with width of one eye about as 9 : 14, narrower in front. Frontal hairs not very long, about half, or less than half, length of strong bristles. Face and antennae dusted brownish-grey. Cheeks very narrow. Jowls seen from below about as wide as third antennal joint. A short uniserial row of short hairs on peristoma in front of the multiserial hairs on jowls. Antennae extending quite to lower margin of face, third joint two and a half times as long as wide.

Thorax slightly dulled by microscopic pile on pleurae, and round margins of disc, rather broadly so at sides, and with some indications of a faintly dusted narrow median stripe. Pubescence not particularly long or dense. No hairs on disc of scutellum. Only one stigmatical bristle. No hairs behind the strong sternopleural bristle.

Abdomen microscopically dusted on first three tergites and basal margin of fourth, but not at sides of third, or apical half at sides of second tergite. Hypopygium (fig. 22) with inner laminate process bearing a flat projection (slightly clubbed in outline) at end nearest anal lamellae. Penis remarkably long and slender for this genus and not jointed.

Legs very distinct in colour of tarsi, the black last joint somewhat shorter and broader than usual. Wings only slightly yellowish, rather darker yellow about base. Stigmal section of costa rather long, more than twice length of middle crossvein which is slightly beyond end of mediastinal vein. Squamae with dark margins and fringes. Halteres black.

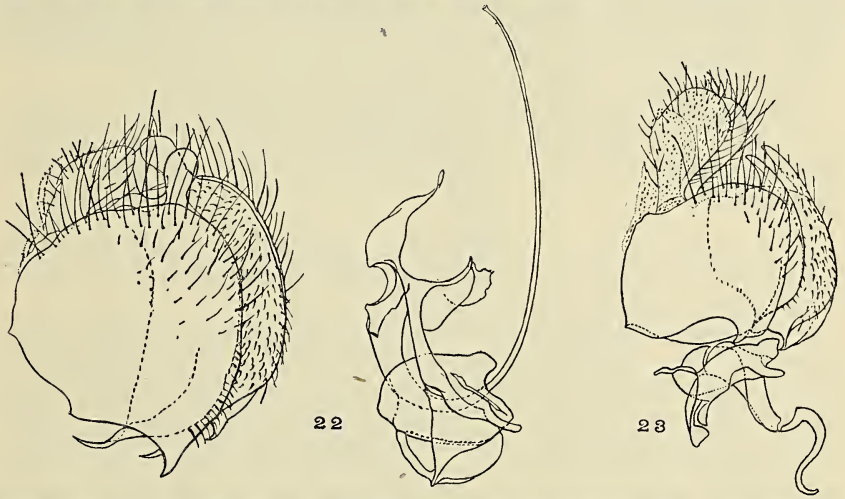
♀. Frons wider, about one-third width of head, dull, at least when viewed from in front. Antennae, as usual, rather longer and broader. All pubescence on frons and thorax shorter, and dusting along sides of thoracic disc less distinct. Abdomen dusted only on first two tergites and about extreme basal margin of third. Ovipositor with a number of pale hairs on terminal section.

Length 3.25-4.75 mm.

Described from five typical males and a female taken in Woodditton Wood (Cambs.) in April and May, and another male at Crowborough (Sussex) in

May, also two females, one at Shute (Devon), the other at Barton Mills (Suffolk), both in May.

The next three species are closely related and though the males may be distinguished with certainty by their genitalia, the females are not easily recognized. The males have in common a peculiar S-shaped terminal portion to penis, a character possessed by only one other British species. viz. *Zetterstedti* Beck., but the structure of the laminate process is different in each species. The males of the first two species may be distinguished from *laticornis* by their whitish wings, longer frontal and thoracic pubescence (the difference in length between hairs and bristles on frons being not so marked, particularly in *obscuritarsis*), and larger anal lamellae.



Figs. 22-23. Hypopygia of: 22, *Lonchaea ultima* (sternite on right); 23, *L. obscuritarsis*.

19. *L. obscuritarsis* sp. n. ♂ ♀. Male with whitish wings, long hairs on frons, projection from inner laminate process of hypopygium at tip (beneath anal lamellae) rather slender and pointed. Scutellum usually with hairs on disc.

♂. Frons dull, except as usual about vertex, width opposite front ocellus compared with that of one eye about as 9 : 13; frontal hairs more than half length of bristles; often hairs on orbits above orbital bristle; eyes microscopically hairy; the uniserial peristomal bristles 5-6 in number and rather long. Antennae about as long as face, third joint about twice as long (measured on inner side) as wide.

Thorax with slight microscopic pile round margins of disc, and some indication of a narrow median dusted stripe, whole of notopleural depression dusted, usually a few hairs as well as the two bristles in this area; pubescence particularly dense and fine on posthumeral area. Usually only one propleural and one stigmatical bristle above front coxae; usually no hairs behind the strong sternopleural bristle.

Abdomen broad, microscopically dusted on first two tergites, on third except at sides, and on base about middle of fourth tergite. Anal lamellae

(fig. 23) rather large, larger than in *laticornis*. Legs with only basal joint of tarsi (and this often only about base) obscurely yellowish.

Wings with a whitish tinge, veins yellowish, stigmal space more yellowish and long, measured on lower side of costa more than three times as long as middle crossvein which is practically opposite end of mediastinal vein. Squamal margins and fringes blackish. Halteres black.

♀. As usual rather more shining, and shorter haired, everywhere, than in male, with third antennal joint rather longer and broader. Frons at middle rather wider than one eye. It may be distinguished from *laticornis* but its comparatively shorter antennae, longer frontal hairs, denser and finer thoracal hairs, hairs on disc of scutellum, darker tarsi, less brownish-yellow wing-membrane, and longer stigma. The same characters with exception of frontal hairs and colour of wing-membrane, help to distinguish it from the female of *laxa*, while this latter usually has more than one stigmatical bristle.

Length variable, 3-5 mm., the former, however, exceptional.

This species is not uncommon in Scotland (Sutherland and Inverness-shire), but I have seen typical specimens from Southern England (Sussex, Cambs., Hants, Hereford, Somerset and Suffolk), and from Wales (Merioneth).

20. *L. laxa* sp. n. ♂ ♀. Primarily distinguished from *obscuritarsis* by the broad projection with bluntly rounded end of inner laminate process of male hypopygium. No hairs on disc of scutellum.

♂. Otherwise differing from description of *obscuritarsis* as follows: Eyes apparently bare. Uniserial peristomal bristles longer. Third antennal joint rather longer, two and a half times as long as wide. Thorax rather less dusted round margin, and no hairs in notopleural depression. Pubescence rather coarser on posthumeral area. Only one propleural but usually a small cluster of stigmatical bristles above front coxae. Often a few hairs behind strong sternopleural bristle. Legs with at least basal joint of hind tarsi entirely yellow.

♀. Normally distinguished from *obscuritarsis* by greater number of stigmatical bristles, and absence of hairs on disc of scutellum.

Length 4.25-5 mm.

Described from a male and six females from Scotland (Sutherland, Perthshire and Inverness-shire), but I caught another male at Barton Mills (Suffolk) on 30th April, 1933, and a female on Warren Hill, Newmarket (Suffolk), in July, 1940.

21. *L. laticornis* Meigen. This species has male genitalia rather like *obscuritarsis* but anal lamellae are smaller and more membraneous, and the projection from laminate process is wider about base (fig. 24). Hairs on frons of male shorter, and none on orbits above orbital bristle. Antennae very long, longer than centre line of face. Only one stigmatical bristle. No hairs in notopleural depression, on disc of scutellum, or behind strong sternopleural bristle. Wings pale brownish-yellow, not whitish.

A common and widely distributed species.

There must be considerable doubt concerning the use of the name *laticornis* Mg. for this species. Meigen described the female only and stated that the arista was "feinhaarig," which must mean that it was *obviously*

pubescent because he described the arista of species which have it only *microscopically* pubescent as "nakt." He also gave the tarsi as "rothgelb mit schwarzer Spizze." Macquart described and figured the arista of his *Teremyia laticornis* Mg. as having pubescence as long as in species of *Lauxania*. Becker (1902) who reported on an examination of Meigen's type as being the same as the species he had previously (incorrectly) recognized as *albitarsis* Zett., did not either then, or when describing his *albitarsis*, mention the arista, but gave the tarsi as having the first two joints "rothgelb." Séguy (1934) described the female of *laticornis* Mg. (but *not* apparently from Meigen's type), he also did not mention the arista but gave the tarsi as "entirement jaunes." Our British species has arista only microscopically pubescent, and each of the last three tarsal joints a little darker than its preceding one.

Fig. 24. Hypopygium of *Lonchaea laticornis*.

Earomyia Zett.

Table of British species

1 (2). Legs entirely black. Scutellum with four bristles only. Fifth abdominal segment in male almost as long as all four others together ..... 1. *nigra* Mg.

2 (1). Basal joint of tarsi at least partly yellowish. Scutellum usually with smaller marginal bristles in addition to usual four. Fifth abdominal segment of male shorter.

3 (6). Bristles on peristoma from lower corner of eye to vibrissal angle uniserial, comparatively few in number (5-6), and more spaced apart.

4 (5). Basal joint of all tarsi distinctly yellow. Third antennal joint at least half as long again as wide. Male abdomen without a terminal vertical slit, or a cluster of bristles projecting from end of hypopygium..... .....2. *viridana* Mg.

5 (4). Basal joint of four posterior tarsi only obscurely yellowish. Third antennal joint scarcely longer than wide. Male abdomen with a terminal vertical slit, and a cluster of bristles projecting from end of hypopygium.....4. *schistopyga* sp. n.

6 (3). Bristles on peristoma from lower corner of eye to vibrissal angle more than uniserial and more numerous.....3. *virilis* sp. n.

(Note: For figures of male hypopygia see p. 191.)

1. *E. nigra* Meigen. This easily recognized species has male genitalia differing from other species in the following particulars: Anal lamellae or mesolobes reduced to very narrow strips bearing hairs, and instead of strongly projecting below, are joined there to an internal, slender, curved, highly chitinized process; the laminate processes, which in other species project from beneath the shell of hypopygium (ninth tergite), in *nigra* have the appearance of forming a ventral basal lobe or continuation to that shell, and the margin of shell where it forms an angle near anus is toothed on its inner side (fig. 2). The female ovipositor differs from that of other species in being longer haired, and in the pair of long hairs on upper side of short terminal section being near middle of that section and not close to its base.

E. nigra is a common and widely distributed species in May, June and July. I have seen specimens from various localities ranging from Scotland in the north to Cornwall and Dorset in the south.

2. *E. viridana* Meigen. The male genitalia differ notably from those of *virilis* and *schistopyga* in the shape of the lamellae projecting from within the "shell" of hypopygium, these are abruptly narrowed near end and have an inwardly directed tooth at junction with broader part. In this respect the species somewhat resembles the genotype *lonchaeoides*. Other differences from *virilis* are: the more dilated and projecting end of anal lamellae, the slightly lobed angle of "shell" near these anal lamellae bearing long bristly hairs, and the stouter base to penis (fig. 3). The species is widely distributed in Britain from Sutherland to Devon and Hants.

3. *E. virilis* sp. n. ♂ ♀. Closely resembling *viridana* Mg. but peristomal bristles more numerous, and with differences in male genitalia.

♂. Compared with *viridana*: Frons slightly wider and rather longer haired; third antennal joint slightly longer, arista rather stouter about base of last section; hairs on jowls and lateral mouthmargins more numerous, more than uniserial even towards front. Fifth abdominal tergite broad and very little longer than fourth. Genitalia (fig. 4) differing as stated under *viridana*. Legs longer haired, especially posteroventral hairs to hind femora quite as long as femur is thick.

♀. Not easily distinguished from *viridana* ♀ except by the more numerous peristomal bristles and longer haired frons.

Length varying from 3 — 3.75 mm.

This species is apparently as widely distributed in Britain as *viridana*, as I possess specimens from Merioneth, Devon, Sussex, Oxon., Suffolk, Cambs. and Inverness-shire. A pair from Barton Mills (Suffolk) may be taken as typical, the male captured on 29.v.37 and the female 4.vi.31.

4. *E. schistopyga* sp. n. ♂ ♀. In size and many characters resembling *viridana* Mg., chiefly differing as follows: ♂. Eyes practically bare, or at least the scanty microscopic pubescence still shorter than in *viridana*; third antennal joint shorter, very little longer than broad; abdomen less shining at sides and end, fifth (apparent last) tergite shorter (not longer) than fourth, with a median vertical slit at end, and a small cluster of upcurved black bristles on end of hypopygium projecting beyond ventral end of this slit. (Genitalia fig. 5.) Legs with basal joint of tarsi not so clear yellow.

♀. Differing from *viridana* ♀ as in male. Abdomen also less shining at sides and end, notably fourth tergite dusted to hindmargin (except at sides), and base of fifth tergite dusted about middle; ovipositor somewhat broader.

Length about 3.5 mm.

Described from two typical males and a female taken at Cothill (Berks.), the males on 6.v.34, the female on 9.v.36. Another male was taken at Nethy Bridge (Inverness) 1.vi.34, two more females at Farley Down (Hants) 8 and 9.vi.33, and a fourth male at Chippenham Fen (Cambs.) on 4.v.51.

In conclusion I wish to express my grateful thanks to many correspondents for supplying specimens, and particularly to Mr. J. H. Burman, F.R.E.S., for help in the preparation of some of the figures for reproduction, and to Mr. E. C. M. d'Assis-Fonseca, F.R.E.S., for checking and typing the manuscript.

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